THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888

No. 6. FEBRUARY 7, 1953 VOL. 65.

TOXICITY OF SULPHAQUINOXALINE (2-SULPHANILAMIDOQUINOXALINE) FOR CHICKENS

BY

S. F. M. DAVIES AND S. B. KENDALL,
VETERINARY LABORATORY, WEYBRIDGE

The possibility of the drug sulphaquinoxaline inducing toxicity was investigated in America by several of the workers who originally tested its efficacy against coccidiosis in poultry, and Delaplane & Milliff (1948) described lesions in laying hens which had received the drug at a concentration of 0·05 per cent. in the mash for 8 to 10 days. These lesions were provisionally attributed to the effects of sulphaquinoxaline but the authors noted that a concurrent infection with *Pasteurella avicida* was present. They were unable to reproduce the condition in young broilers which received 0·05 to 0·10 per cent. of the drug in the food for periods of up to two weeks. Similarly, Delaplane, Batchelder & Higgins (1947) stated that although toxic symptoms might appear when the drug was fed at a concentration of 0·05 per cent. for 8 to 10 days there was no evident effect when it was given for 12 weeks at a concentration of 0·033 per cent. Grumbles *et al.* (1948) noticed no symptoms of toxicity when the drug was fed in mash at a concentration of 0·05 per cent. for various periods in intermittent schedules, all birds making steady weight increase. They stated that this concentration of the drug could be fed intermittently to birds without affecting egg production or hatchability.

During the course of a number of observations made in the United Kingdom by one of us (Kendall, 1950) there was no evident toxicity when the drug was used for a period of 72 hours at various concentrations in the food or water. Most of these observations were concerned with the use of the drug at the comparatively low concentration of 0·05 per cent. sodium sulphaquinoxaline both in food and in water. Given in the drinking water at this concentration from the 48th to the 120th hour there was a very marked reduction in the mortality from experimentally induced caecal coccidiosis. It was concluded that the drug was likely to prove effective as a coccidiostatic agent and that "its toxicity to chicks was no greater than that of sulphamezathine used under comparable conditions." At the usually recommended level of 0·2 per cent. of the drinking water there has been, in fact, little evidence of toxicity from sodium sulphamezathine when used under field conditions for periods not exceeding five days although Asplin & Boyland (1947) had shown that sulphamezathine could produce toxic symptoms in chicks as well as testicular hyperplasia in young rats. It seemed that sulphaquinoxaline would be likely to induce toxicity only when used for excessively long periods or at unreasonably high concentrations.

Since 1950, sodium sulphaquinoxaline has come into commercial production in Britain and its use has been widely advocated. In general, it has fulfilled its early promise as an effective coccidiostatic drug but there have been a sufficient number of field reports of mortality associated with its use to justify further investigation into its possible toxicity under certain circumstances and in 1951 Gordon made observations on an outbreak of disease in fowls, possibly associated with sulphaquinoxaline poisoning. At Weybridge, laboratory observations accordingly were arranged to try to determine the conditions under which toxicity might arise. Three types of experimental evidence will be discussed :—

(1) The effect of low concentrations of the drug for long periods of time.

(2) The effect of high concentrations of the drug for short periods and the typical gross evidence of toxicity.

(3) The effect of drug concentrations similar to those in use for the control of outbreaks of acute caecal coccidiosis in Britain.

(1) LOW CONCENTRATIONS OF THE DRUG

(*a*) *0·025 per cent. of the Drug in Dry Mash for Three Months*

In this observation R.I.R. chicks received, from the age of three days, a dry mash diet in which was incorporated 0·025 per cent. by weight of sulphaquinoxaline powder. Initially the chicks were kept in an electrically heated wire-floored brooder but at 30 days they were transferred to floor pens in which the sawdust litter was replaced rather infrequently. The chicks were maintained under these conditions until the experiment was terminated two months later.

Over the total period of three months, observations were made in order to determine whether mortality was unusually high and whether the drug affected the growth of the chicks. Representative groups of chicks were killed at intervals, bodyweights and weights of the testes were ascertained and the carcases were examined for gross evidence of toxicity. Data so obtained were compared with those from the examination of similar groups of untreated chicks kept under otherwise identical conditions in the laboratory.

Throughout the observations there was no gross evidence of toxicity and application of a simple analysis of variance showed no significant differences in bodyweights between birds in the treated and in the untreated groups. Rather small groups of birds were compared for weights of the testes and no significant difference due to the effect of sulphaquinoxaline could be demonstrated.

It appeared that chicks could receive sulphaquinoxaline powder mixed in dry mash at a concentration of 0·025 per cent. for a period of three months without showing signs of toxicity.

It was decided to repeat the observation, using laying hens instead of growing chicks.

(*b*) *The Effect on Laying Hens of Concentrations of 0·025 and 0·05 per cent. of Sulphaquinoxaline in Dry Mash*

In this observation 24 R.I.R. hens were divided at random into two groups which were kept for a period of 69 days under similar conditions in adjacent grass runs.

During the period of observation, weight increase, mortality, general health and egg production were recorded. For the first 40 days of the observation one group of birds received medicated mash containing 0·025 per cent. of sulphaquinoxaline powder. From the 40th day until the 69th day, when the observation was terminated, this was replaced by mash containing 0·05 per cent. of the drug. The other (control) group of birds received plain mash throughout.

At the conclusion of the observation it was seen that the total food consumption in the two pens was equal at approximately 250 lb. Egg production from the control group (receiving plain meal) totalled 427 while from the birds receiving the drug it totalled 411, a difference which cannot be regarded as significant. Analysis of the difference in final bodyweights of the birds in the two pens showed no significant difference which could be attributed to the effect of the drug. During the course of the observation no mortality was observed among the birds receiving plain mash but of those receiving the drug one died on the 45th day and one on the 60th day after the commencement of treatment. In the former instance there was a history of ill health since the seventh day, in the latter the bird died as the result of an accident.

It appeared, therefore, that sulphaquinoxaline at concentrations of 0·025 and 0·05 per cent. by weight in the mash had no effect on growth, egg production or mortality either in growing chicks or in adult laying hens.

It was decided to test the effect of the drug at considerably higher concentrations.

(2) The Effect of High Concentrations of the Drug

(*a*) *Effect of Concentrations of 1, 1·5 and 2 per cent. of Sulphaquinoxaline in the Mash for Six Days*

Forty R.I.R. chicks, 14 days old, were divided at random into four groups, A, B, C and D. These were placed in small wire-floored hovers and received, for a total period of six days, rations of :—

(Group A) plain dry mash ;

(Group B) dry mash containing 1 per cent. sulphaquinoxaline ;

(Group C) dry mash containing 1·5 per cent. sulphaquinoxaline ;

(Group D) dry mash containing 2 per cent. sulphaquinoxaline.

During the observation careful note was made of any symptoms suggesting sulphaquinoxaline poisoning. All surviving chicks were sacrificed 13 days following the day on which treatment commenced. *Post-mortem* findings are detailed in Table I.

Table I

Showing the Effect on 14-day Chicks of 1, 1·5 and 2 per cent. Sulphaquinoxaline fed in Dry Mash for Six Days

Group	Chick	Gross pathology indicating toxicity
(B) 1 per cent. received 0·765 gramme drug per chick during six days	1	Yellow fluid in body cavities around liver lobes.
	2	As B1, also petechiae and small necrotic nodules in liver.
	3	As B2, also small necrotic nodules in spleen.
	4	Small necrotic nodules in spleen.
	5	" " "
	6	" " "
	7	Small necrotic nodules in liver.
	8	No gross lesions.
	9	" "
	10	" "
(C) 1·5 per cent. received 1·042 grammes.	1	Yellow fluid in body cavities around liver lobes.
	2	Ditto ditto
	3	Ditto ditto
	4	As C1, also necrotic foci in liver.
	5	As C4, also necrotic nodules in spleen.
	6	As C5.
	7	Necrotic nodules in spleen.
	8	No gross lesions.
	9	" "
	10	" "
(D) 2 per cent. received 1·62 grammes.	1	Yellow fluid in body cavities around liver lobes.
	2	Ditto ditto
	3	Ditto ditto
	4	Necrotic nodules in spleen.
	5	As D1, but died on seventh day from commencement of treatment.
	6	As D5.
	7	No gross lesions.
	8	" "
	9	" "
	10	" "

Note.—*Post-mortem* examination of birds in Group A (receiving plain dry mash) showed no abnormalities.

Examination of the *post-mortem* findings recorded in Table I shows clearly that drug concentrations of 1, 1·5 and 2 per cent. sulphaquinoxaline in the food may induce toxicity in two- to three-week-old chicks. A further observation showed that eight-week-old chicks which received approximately 3 grammes each of the drug over a period of 42 hours showed similar evidence of toxicity.

(*b*) *Effect of 3 grammes of Sodium Sulphaquinoxaline given directly into the Crop over a Period of 42 hours*

Ten R.I.R. chicks aged eight weeks were placed in a wire-floored cage where they received an unlimited ration of dry chick mash and water. Each chick received 30 ml. of a commercial preparation of sodium sulphaquinoxaline stated to contain 10·32 per cent. of the drug. The 30 ml. dose was divided into five equal parts and given over a period of 42 hours.

Evidence of Toxicity.—Shortly after treatment was commenced there was a marked reduction in appetite and within 12 hours the crops of the treated birds lost tone, becoming flaccid and swollen. On the fourth day after the initial inoculum of sulphaquinoxaline a chick was sacrificed and on *post-mortem* examination showed evidence of toxicity similar to that noted in earlier observations. Most characteristic was the presence of early necrotic foci evinced by blue spots on the spleen. In addition there was an excessive amount of fluid in the pericardial sac. Two days later, on the sixth day following commencement of treatment, one chick died, *post-mortem* examination revealing haemorrhagic spots on the spleen and a slight hydropericardium together with small haemorrhagic spots on the liver and very extensive haemorrhages in the left pectoral muscles. This was a similar condition to that observed in some field cases suspected of being associated with sulphaquinoxaline poisoning. On the seventh day following the initial treatment a second bird died. The carcase was oedematous and the body cavities contained a considerable amount of haemorrhagic fluid. There were numerous dark haemorrhagic spots on the liver and spleen and there was an extensive area of haemorrhage in the muscles covering the ribs.

Of the group of 10 birds, nine showed some or all of the lesions characteristic of the condition up to the time when the last bird was sacrificed on the 14th day following the initial treatment.

This observation confirmed the characteristic picture of sulphaquinoxaline poisoning which can now be discussed.

Typical Lesions Associated with Sulphaquinoxaline Poisoning

According to early reports (Delaplane & Milliff, 1948) the symptoms of sulphaquinoxaline poisoning included weakness and anaemia which might be followed by death with the following lesions :—

(1) Grey-white nodules in the lungs.

(2) Multinucleated or giant cells in the spleen, caseation necrosis in the centre of the affected follicles, grey-white nodules in the liver and petechial haemorrhages in the kidneys, nodular lesions in the heart and haemorrhages beneath the skin. Of these lesions, the first, the presence of grey-white nodules in the lungs, has not yet been seen in our experimental observations.

The remaining lesions, all of which can broadly be classed as indicative of circulatory disturbance, are, in our experience, those most characteristic of sulphaquinoxaline poisoning. Most often the spleen is affected, being enlarged with sharply defined areas of haemorrhage or small yellow-white necrotic nodules. The presence of large amounts of fluid in the peritoneal cavity, particularly around the liver, is characteristic of the condition. In many instances the fluid is haemorrhagic and may be palpated in the living chick in a position anterior to the gizzard and posterior to the sternum. In pale-skinned chicks the darkly haemorrhagic fluid may be very apparent even on superficial examination of the living bird.

Haemorrhages in other parts of the body, notably the liver and pectoral muscles, were seen rather more rarely although frequently the liver was pale with rounded edges and consolidated in texture. Under field conditions, however, extensive muscle haemorrhages seem to be characteristic of sulphaquinoxaline toxicity. Affected birds usually appear to develop a general oedema, the muscles lose tone and have a characteristic greasy appearance. Actual mortality under our experimental conditions was not usually very high. (The implications of this observation will be discussed later.) It was clear, however, that the degree of morbidity could be considerable and it remained to demonstrate under controlled conditions, that symptoms of toxicity were likely to be produced at similar concentrations to those used in Britain for the field control of coccidiosis.

(3) Use of Sodium Sulphaquinoxaline under Field Conditions in Britain

In this country the drug has been made available principally as the sodium salt in a proprietary solution stated to contain 10·32 per cent. sodium sulphaquinoxaline and its use recommended at a concentration of 0·0645 per cent. in the drinking water for a period of four or five days. Under field conditions it is sometimes found that the treatment period is extended by the poultry keeper and in assessing the possible toxicity of the drug allowance must be made for such inevitable deviations from the recommended level of dosage.

Observations were made in order to test the toxicity of the drug at a concentration of 0·0645 per cent. replacing the drinking water for periods of :—

(*a*) Seven days ;

(*b*) The usually recommended period of five days ;

(*c*) An interrupted schedule of three days' treatment, two days off treatment and a further three days' treatment.

The results of these observations are compared in Table II.

Table II

Effect on Four-week Chicks of a concentration of 0·0645 per cent. Sodium Sulphaquinoxaline in the Drinking Water for Seven Days, Five Days and an interrupted 3-2-3 Schedule

Post-mortem findings	Group (A) 34 chicks average drug consumption =0·336 gramme per chick during a period of seven days	Group (B) 60 chicks average drug consumption =0·222 gramme per chick during a period of five days	Group (C) 23 chicks 0·288 gramme per chick during the 3-2-3 schedule of treatment
	Sacrificed on 11th day.	Sacrificed on 7th day.	Sacrificed on 12th day.
Fluid in body cavities around liver	14 (13 haemorrhagic)	8 (5 haemorrhagic)	6 (all haemorrhagic)
Fluid in main peritoneal cavity	9 (6 haemorrhagic)	10 (1 haemorrhagic)	4
Hydropericardium	8	2	3
Haemorrhagic and/or necrotic foci in spleen	24	24	2
Pale consolidated liver with rounded edges	7	5 (1 haemorrhagic)	4
Total number of birds affected	26	27	7
Deaths	8	0	0

Discussion

Whereas most of the original observations on sulphaquinoxaline showed that the drug at a concentration of 0·05 per cent. in the food and water did not produce any toxic symptoms, Table II shows that sodium sulphaquinoxaline at a concentration of 0·0645 per cent. in the drinking water may produce toxicity in chicks in as short a period as five days and that substitution of interrupted therapy, Table II, Group C (three days' treatment, two days without treatment and a further three days' treatment), still may produce untoward results. With an increase in the period of administration (to seven days), Table II, Group A, considerable mortality resulted and a high percentage of the birds showed characteristic haemorrhagic or necrotic spleens and the presence of blood-stained fluid in the body cavities. These experimental data are sufficient to confirm the original field evidence of mortality which could be attributed to sulphaquinoxaline.

Likelihood of Higher Rates of Mortality under Field Conditions.—Under field conditions there have been reports of mortality (associated with sulphaquinoxaline therapy) which considerably exceeded that observed at the laboratory. There is often evidence in the laboratory, where birds are ordinarily maintained under good environmental conditions and where adventitious infection is precluded, that recovery from the pathogenic effects of sulphaquinoxaline can occur. It may be significant that some of the reported outbreaks of toxicity under field conditions are known to have been complicated by other disease. Birds suffering from the toxic effects of sulphaquinoxaline are likely to be highly susceptible to intercurrent infection.

Further experimental evidence suggests that the clinical picture is more complicated than that of simple toxicity arising from too great an intake of the drug.

Age as a Factor in Sulphaquinoxaline Toxicity.—As suggested to us by Mr. J. D. Blaxland at Weybridge, there is already

evidence from the field that toxic symptoms are more likely to develop in older chickens. Our laboratory observations, which are continuing, show that the drug produces toxicity much more rarely in chicks under three weeks of age. This aspect of the problem will be reported at a later date.

Mode of Administration of the Drug as a Factor in Inducing Toxicity.—Preliminary observations have suggested that toxic symptoms occur more often when the drug is administered in the drinking water rather than when it is administered in the food. This matter also is under further investigation.

Individual Variation in Susceptibility to the Toxic Effects of the Drug.—It is noteworthy that in each group of chicks only a proportion showed the toxic effect of the drug. Particularly at the lower concentrations a number of chicks appeared to be unaffected. In general there was either considerable pathogenic change or none at all.

Summary

Laboratory observations have shown that sodium sulphaquinoxaline at a concentration of 0·0645 per cent. of the drinking water may induce toxic symptoms in chickens even when used for five days only. Higher concentrations of the drug or its use for more extended periods can produce more dramatic effects. These observations confirm field reports of toxicity associated with the use of the drug for controlling caecal coccidiosis. Our preliminary observations have suggested that the appearance of toxicity is associated not only with excessively high intake of the drug but also with the factors of age of the chick, the mode of administration of the drug and the presence of intercurrent disease.

References

Asplin, F. D., & Boyland, E. (1947). *Brit. J. Pharmacol.* **2.** 79-92.

Delaplane, J. P., Batchelder, R. M., & Higgins, T. C. (1947). *N. Amer. Vet.* **28.** 19-24.

———, & Milliff, J. H. (1948). *Amer. J. vet. Res.* **9.** 92-96.

Gordon, R. F. (1951). *Proc. Ninth World's Poult. Congr.* **3.** 95-101.

Grumbles, L. C., Delaplane, J. P., & Higgins, T. C. (1948). *Poultry Sci.* **27.** 411-419.

Kendall, S. B. (1950). *Vet. Rec.* **62.** 381.

ABSTRACTS

Neuropathological Diagnosis of Swine Fever*

The incidence of encephalitis in 85 cases of swine fever was 95 per cent. The authors describe the microscopic changes and discuss the differential diagnosis. The article is illustrated by photomicrographs. They found "no evidence that live virus vaccination ordinarily caused an encephalitic picture similar to that in the spontaneous disease."

A. R. J.

* **Further Observations on the Neuropathological Diagnosis of Swine Fever.** Hemboldt, C. F., & Jungherr, E. L. (1952). *Amer. J. vet. Res.* **13.** No. 48.

* * * * *

Value of Inclusion Bodies in the Diagnosis of Swine Fever*

The literature on the presence or absence of inclusion bodies in swine fever is reviewed. The author was unable to demonstrate inclusion bodies in any of the tissues or organs examined.

A. R. J.

* **The Value of Inclusion Bodies in the Diagnosis of Hog Cholera.** Benson, D. V. (1952). *Amer. J. vet. Res.* **13.** No. 48.

OVINE OPHTHALMIA: SOME OBSERVATIONS—RESPONSE TO RIBOFLAVIN

BY

D. T. MICHAEL,

Ruthin

Ophthalmia may appear among a number of sheep within a very short period, and the causal organism of the infection is cited as *Rickettsia conjunctivae*. Outbreaks vary in severity and may occur throughout the year; autumn is regarded by many observers as the peak period. Sheep of all ages and either sex may be affected, in one or both eyes.

The earliest symptom is that of a copious watery discharge from the affected eye, that moistens the lower lid and area surface below the inner canthus. At the same time slight photophobia is apparent, the eyelids partly closed. These early cases are best detected when the sheep have been allowed to settle quietly after collection or folding, for the slightest disturbance causes the eyelids to be fully opened. The conjunctiva and sclera are injected, with slight vascularisation of the cornea and a commencing opacity, which at first appears as a diffuse translucent blue at the peripheral zone of the cornea. As the disease progresses, the ocular discharge changes from a watery consistency to become mucopurulent and adhesive. The degree of corneal opacity increases in intensity with the leucocytic infiltration of the keratitis, until the colour registered may be a bluish or pinky grey. At this stage because of the occlusion of light, photophobia is less marked or even absent. Complete blindness is usually associated with excessive ear movement, high stepping gait, inability to avoid obstacles, and a tremulous apprehension of sensed approach. Such cases are generally associated with systemic disturbance and elevated temperature.

Among cases in a well-established outbreak, the zones of corneal opacity may be partial or complete, and the varying phases of onset—albugo, nebula, leucoma—and of recovery, may be seen. A zone of intense congestion may be observed along the corneo-sclerotic margin from which may be traced a proliferation of congested vessels across the cornea. Ulceration of the near centre of the cornea may be observed.

The sequelae are complete or partial recovery, within 9 to 50 days; or permanent opacity. Rupture of Decemet's membrane from extension of any ulceration results in phthysis occuli, or atrophy, which when unilateral is of no great inherent detriment but detracts from the market value of the animal.

Various preparations have been recommended for treatment, and whilst the value of many is a matter of personal opinion, the psychological effect upon the owner or attendant engaged in undertaking some measure of treatment is probably better than that of passive interest awaiting recovery. Lotio oc. 1 or 2, with or without myotics (indicated in glaucoma); arg-proteinate; coll. argyrol. have been prescribed. Some of the more subtle home remedies undertaken are instillations of sugar or of tobacco juice—prepared by human aid, with a favoured selection of shag or twisted tobacco; the incision of the lower palpebral vein, afterwards rotating the animal's head to allow the blood to flow into the eye. The most primitive and least desirable was the placing of a small quantity of finely grated slate into the lower conjunctival sac. This practice arose from the legend that the opacity was a membrane, and the sharp

edges of instilled slate were calculated to scrape this away.

Segregation of affected sheep is to be recommended; it is a measure which, apart from reducing the hazard of exposure to infection of the remaining healthy sheep, facilitates any treatment required and prevents loss, from accident and other causes, that might arise through impaired vision. Fresh cases are then drafted to the affected lot.

Attention has been drawn (Belschner, 1950) to the frequency with which this condition appears to be associated with substantial growth of grass. It has been submitted that ocular discharges from affected sheep contaminate the herbage which in turn reinfects others. Equally important is the fact that sheep do not always do well as a flock on long keep; such keep may be associated with increased density of stocking. However this may be, the long grass theory does conform with the experimental transmission to other sheep by direct instillation of infected discharges. The condition has also been recorded against conditions of sparse keep. Exposure during prolonged inclement periods, and lack of shelter, increases stress as a predisposing factor; but so do dry hot dusty periods. Bracken spores have been incriminated when outbreaks have followed upon autumnal drives and collections, and where such drives are associated with statutory dipping orders, then the dip or the Ministry may be included with the occult. Actually under such conditions it appears difficult to assess and apportion the relative importance of fatigue factors, the temporary crowding in collecting pens, and the chance irritation of immersion. Cases have occurred among housed sheep, being fed for show purposes.

Spontaneous outbreaks in different lots of sheep from the same flock, well isolated, with no history of movement or introduction of fresh sheep, and the histories of periodic outbreaks in particular flocks, indicate a carrier rate. The pathology of this disease appears to be a little more involved than the citation of a causal organism. A keratitis may be found associated with photosensitisation and pustular dermatitis.

Corneal vascularisation and opacity have been recorded in experimental and other animals in relation to riboflavin deficiency. From 1947 on (and when suitable clinical material proved available), 93 cases have been treated by oral administration of riboflavin.

An accurate prognosis of this condition presents considerable difficulty, so that interpretation of the phases of resolution was controlled as well as possible. During periods of stress the most important measure is to ascertain that adequate shelter and food are made available; this applies to the flock as a whole. To cite some of the extreme cases that have been met: ewes with lambs at foot on a bare lowland pasture with no banks or well-laid hedges to provide any degree of shelter from a north-easterly wind; poorly coated hill sheep grazing an enclosed intake (in-bye-land or ffridd), bleak and exposed at 1,000 feet, with the greater part of the enclosure of wire netting. Any attempt to undertake or recommend any therapeutic measures in such cases is a little futile. The urgent necessity is removal to shelter, and food. Under continued hazard of exposure the risk of phthysis occuli is greatest. The fact that accidentally changed conditions of shelter and grazing have contributed more to recovery, in the past, than specific measures, cannot be overlooked.

An initial daily dose of 6 mg. riboflavin has since been increased to 15 mg., but it is not suggested that this is in any way an optimal quantity. Three to five doses were given and then discontinued. In early cases lachrymal discharge has ceased within 48 to 72 hours, where controls showed no improvement; and over a period of days a reduction in the degree of opacity was apparent. With more advanced cases the resolution is slower, and in those well established with substantial changes in the eye, it is difficult to form an opinion of the efficacy of this method of treatment. In some instances it was found that even though examination of faeces revealed no significant burden, anthelmintic treatment in lambs assisted recovery. Perhaps the most satisfactory groups of recovery were recorded in sheep housed and fed in preparation for the show ring. Whether parenteral administration of a larger dose would prove more effective is not yet known. Despite early resolution, and apparently normal appearance of the eye, an injected appearance of the conjunctiva persisted for 7 to 10 days.

The results observed may be more the product of a therapeutic effect than the correction of a deficiency. Is the sheep at all times independent of exogenous sources of B_2?

Thomas & Walker (1949), in the determination of the B vitamins in 20 species of legumes, grasses and herbs, noted the comparatively high figures obtained for riboflavin in *F. rubra* (red fescue) and *C. cristatus* (crested dogstail). Manurial treatment did not appear to influence the values observed, but weather conditions did so.

Acknowledgment is made to the support of Sir Thomas Dalling in sponsoring these observations.

References

Belschner, H. G. (1950). "Sheep Management and Diseases." Angus and Robertson.

Thomas, B., & Walker, H. F. (1949). *Empire J. exp. Agric.* **17**, 170-171.

TRANSPORT FOR INJURED HORSES

BY

J. C. RICE,

Cosby, Leicester

Modern surgical methods, as pointed out by Major Hamilton Kirk in your issue of May 31st, 1952, have greatly increased the possibility of saving horses. It will be recalled that he cited a case of a thoroughbred being shot on a racecourse near London in which *post-mortem* examination showed no fracture. Penicillin, coupled with modern methods of plaster-cast repair, metallic bone-plating, and pinning with stainless-steel pins all make it possible, in many cases, to save an injured animal.

One can assume, then, that provided there are no undue obstacles, modern veterinary surgery can save the injured animal—and this includes a beast or domestic pet. What are the obstacles? One has to count temptation, where an animal is well insured, for the owner to cash in and take the sum insured rather than accept an animal which might not completely recover for work. Then there is the possible lack of veterinary service, or the fact that an overworked veterinary surgeon might find it the easiest way out to use the gun. But Major Kirk has pointed out one of the major difficulties as being transport, a suitable means of lifting and carrying the horse home. Firms like the Lambourn Racehorse Transport Service would have no difficulty in building an efficient ambulance for those who could afford to pay for it, but the question of cost rules out any possibility of such ambulances being available in the vast numbers necessary to be really useful.

Trailers are the answer to this call for low-priced, efficient ambulances. Firstly, the extremely low loading level

of the properly designed trailer makes it comparatively easy for a horse to hobble in on three legs, while the particular type of trailer I have had made in an endeavour to meet this requirement, with the forward exit, eliminates the need to back out a horse in this predicament. The value of such a trailer has been commented on by Mr. A. C. Shuttleworth, of the Liverpool University Veterinary Hospital, who has been the veterinary surgeon at steeplechase meetings for many years, not to mention his proximity to Aintree. He makes this point: "A horse with a fractured limb does not lie recumbent. It will rise immediately and will sometimes attempt to continue the race, but, of course, will soon pull up. All such cases can walk into an ambulance, particularly if of low elevation. I believe the best means of transporting a horse with an injured limb would be a low, steadily riding box or trailer. The stall must be tight-fitting with the sides padded. In addition, a canvas belly-band slung across bars will give him further support if he feels like using it."

That exactly describes a trailer that has been in use by the Wetherby Steeplechase Committee for some years and which is stated to have saved several valuable horses every year. Their trailer is a " Farmer's Hunt " model similar to that used by Lieut.-Colonel Llewellyn to carry his famous Foxhunter. A simple roller device raises a broad canvas belt under the horse to take weight off the fracture. Reporting on the usefulness of this outfit, Major W. T. Lipscombe, as Clerk of the Course at Wetherby, has said: ". . . the horse ambulance trailer with roller and ratchet device has given every satisfaction and been commented on favourably by the Inspector of Courses, Colonel Cape. We have had it available for all races, about seven days each year. I do not know how often it has carried injured horses, but no doubt three or four times a year."

(The detachable partition is for this purpose left in and used as a support.)

Experience is overwhelming, that if such transport is available at 'chases, shows and hunts, horses can be got home and then saved. Fortunately, there are literally thousands of such trailers about the country, seeing that so many horses are taken to the event in such transport. The provident owner or organisation can have at hand almost without further expense a means of carrying a horse on three legs in a low-level, easy riding trailer (which, by the way, indicates *twin-axle* suspension). For very little extra cost the belly support can be fitted.

To consider now the more serious cases of injury, where the horse is prone and unable to walk into the trailer, again the low level provides an easy solution. My company has devised a means of loading and discharging such an animal by rolling it on to a canvas sheet, suitably strengthened, and pulling it into the trailer by hand or by car. The idea was first tried out by placing weights totalling 1,425 lb. (12¾ cwt. or 645 kg.) on the mat in such a way as to simulate the prostrate horse, this load being pulled into the trailer from a wood floor by six men outside and two men inside to do a little steering.

Then the assistance of the Director of Army Veterinary and Remount Services was sought and willingly given in the commendable effort to find some way of saving valued horses. An opportunity occurred when a horse of 16·1 hands had to be anaesthetised, for another purpose, and we were given a chance to transport the horse at the Royal Army Veterinary Corps Training Centre and Depot under the care of the Veterinary Officer, Major MacLennan, who administered the anaesthetic. There should seldom be any shortage of manpower at the normal jumping event, so we felt entitled to use eight R.A.V.C. soldiers for the loading that might otherwise be done by any car. The horse was placed on the " mat " and the whole dragged to the rear of the trailer. In order to avoid the possibility of damage to the horse or trailer, Colonel A. G. Ralston, who supervised the operation, had all four legs secured and an attendant constantly at the head. These precautions are particularly necessary where there is any possibility of the animal coming out of the anaesthetic before unloading. The hind legs were secured by means of a rope round the pasterns and forward through a loop round the neck. The forelegs were secured to the hind legs. If possible some protection for the head should be provided in the form of a padded scrum cap or hood, either roughly of sacks or previously made up in quilted form to fit the head. In addition a rolled blanket was placed under the head. The illustration

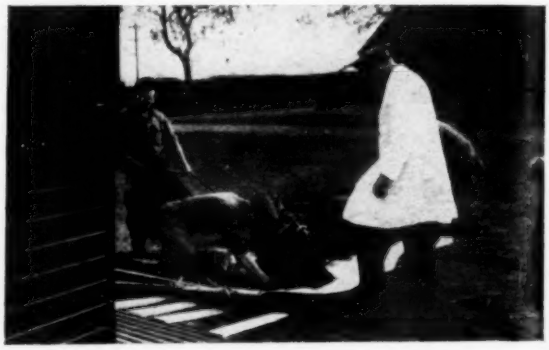

Fig. A.

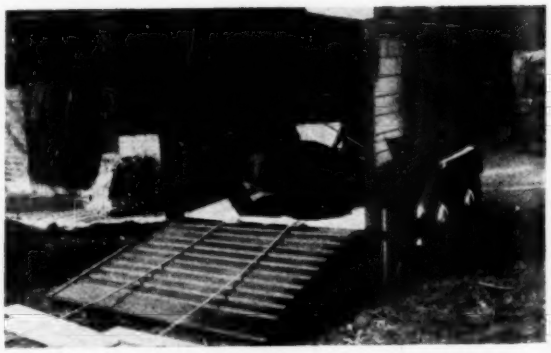

Fig. B.

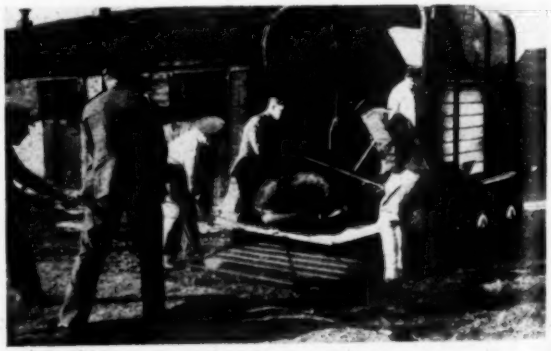

Fig. C.

"A" shows the horse about to be drawn into the trailer, a rope passing each side out of the forward end of the trailer, three men a side. Fig. "B" shows that there is plenty of space for the horse 16·1 hands (the partition being removed—a moment's work) and Fig. "C" the withdrawal. The unloading was somewhat easier still and it was obvious that, apart from attending to the horse, one man and a car could provide the power. I am grateful to the War Office for the facilities which proved the practicability of this idea.

However, there is much veterinary opinion to indicate that the cases where a horse cannot rise within 15 minutes or so, but can yet be saved, are fortunately few. In these circumstances the use of the mat might be restricted to loading either dead animals or injured ones that had to be removed from the public gaze prior to being put down elsewhere. There are many trailers fitted with a small winch for drawing in such loads and the "mat" facilitates the process. The "mat" could consist of a trellis type of flexible floor with rollers or small wheels.

We will approach the ideal situation when every jumping or hunting event makes available a low-level trailer, preferably with front exit, fitted with the inexpensive belly support and, for the worst cases, the canvas sheet. Finance has been quoted as a big obstacle to ambulance service, but these items can be had at very little cost. Most horse-loving organisations have members with trailers and the additional cost of fitting the support would not be more than £10 to £15, while the mat can also be provided for a similar figure.

UNIVERSITY OF LIVERPOOL DEGREE OF B.V.Sc.

Following is the January, 1953, Examination List of the Faculty of Veterinary Science, University of Liverpool, for the Degree of B.V.Sc.:—

SECOND EXAMINATION

Part 1 (New Regulations)

Adams, D. V. M.
Bate, T. C.
Boyd, R. W.
Butler, Eileen J. M.
Chandler, N.
Copley, J. D.
Edwards, B. F.
Evans, R. K.
Featherstone, P.
Glaister, A. I. E.
Gleave, P.
Greenwood, J.
Hudson, G.
Lowe, A. D.
Potts, R. R.
Sanford, J.
Scambler, J. D.
Smith, M. W.
Stevenson, D. E.
Telesford, F. L.
Wallis, A. S.
Walters, T. M. W.
Wheeler, A. J.
Williams, Rosemary J.
Wright, C. L.

Part 2 (Old Regulations)

Freeman, A. P.
Llywelyn, G.
Wood, J.

Part 2 (New Regulations)

Adams, D. V. M.
Bate, T. C.
Boyd, R. W.
Butler, Eileen J. M.
Chandler, N.
Copley, J. D.
Edwards, B. F.
Evans R. K.
Featherstone, P.
Glaister, A. I. E.
Gleave, P.
Greenwood, J.
Hudson, G.
Potts, R. R.
Sanford, J.
Scambler, J. D.
Smith, M. W.
* Stevenson, D. E.
Wallis, A. S.
Walters, T. M. W.
Wheeler, A. J.
Williams, Rosemary J.
Wright, C. L.

* Passed with Distinction

CLINICAL COMMUNICATION

AN OUTBREAK OF MASTITIS IN CATTLE DUE TO INFECTION WITH AN ORGANISM OF THE FRIEDLANDER (KLEBSIELLA) GROUP

D. BUNTAIN, M.R.C.V.S.,
AND
H. I. FIELD, M.SC., M.R.C.V.S.,
VETERINARY INVESTIGATION CENTRE, DEPARTMENT OF ANIMAL PATHOLOGY, UNIVERSITY OF CAMBRIDGE

The Friedlander group contains certain species of coliform bacilli which cannot readily be placed in the coli-aerogenes group. In this group are included the so-called capsulated bacilli, such as Friedlander's pneumobacillus, the bacillus of rhinoscleroma, and others, which are commonly found in the respiratory tract of man, where they appear to lead a parasitic existence.

Among domestic animals organisms of the Friedlander group are isolated most commonly from pigs. They have been isolated on several occasions in this laboratory from a miliary, tubercle-like condition of the lungs and are also found in association with virus pneumonia and metritis. Friedlander's bacilli are found less commonly in cattle and there appears to be only one record in the literature of the isolation of an organism of this group from the bovine udder. Laigret & Leblois (1950) reported the recovery of Friedlander's bacilli from an acute case of mastitis involving the right hind quarter of a cow. An unspecified coccus was also present. The condition was characterised by gross oedema, a temperature of 105·8° F. and general systemic disturbance.

The present communication describes an outbreak of clinical mastitis due to infection with an organism of this group and so far as we are aware this is the first time Friedlander's bacilli have been shown to be responsible for a herd infection.

CLINICAL HISTORY

The outbreak occurred in a self-contained herd of pedigree Red Poll cows, which was in the process of becoming attested. Some of the 38 cows in the herd had reacted to the tuberculin test and were awaiting disposal. Several calves had also reacted to the test after being fed milk from one cow with a tuberculous udder.

The herd was maintained at pasture throughout the year except during spells of inclement weather when the cows were confined to covered yards. Grazing was supplemented according to season with hay, roots and concentrates. The cows were milked in a stationary bail. Clinical mastitis had not been regarded as a problem in the herd, although occasional cases had occurred.

The outbreak started in June, 1951, when five cows, all in late lactation, were found to be yielding grossly altered milk. These cows were dried off shortly afterwards and no further cases were observed until October, when another four cows developed clinical symptoms. The infection then spread rapidly until at a herd test carried out in January, 1952, 28 of the 38 cows were excreting the organisms in the milk.

The onset of infection was insidious with no apparent alteration in the affected quarters apart from the presence of a little thick, mucoid material in the foremilk. As infection became established, the udder secretion showed,

on standing, a bluish, rather watery supernatant fluid almost devoid of cream and a variable amount of deposit consisting of thick, greyish-white clots having a mucoid consistency. In advanced cases, the secretion was grossly changed, consisting of a thin, greyish, watery fluid containing a large amount of thick, muco-purulent, catarrhal material which in some cases was tinged with blood. Infection persisted in affected quarters for several months. Cows which were positive on test and showed clinical evidence of infection were giving abnormal milk four months later. At no stage was acute inflammatory swelling present in any of the affected quarters. Palpation in the early stages revealed little abnormality but in some old-standing cases localised areas of fibrosis could be detected, mainly in the region of the milk cistern.

The treatment of affected quarters with penicillin or streptomycin had no effect on the course of the infection or the nature of the udder secretion. A few cows dosed with sulphanilamide *per os* also showed no response to treatment.

Milk from some of the affected cows was fed to calves on the farm for a period of 10 days. Four calves subsequently died within a period of five weeks, after showing a train of symptoms characterised by increased respiratory rate, a catarrhal nasal discharge, scouring and marked loss of condition. One of these was slaughtered *in extremis*, and examination showed an extensive pneumonia with abscess formation and cavitation. Friedlander's bacillus was isolated in culture from the lung tissue, together with *C. pyogenes*.

During the course of the outbreak one of the more badly affected cows was sent for slaughter. Examination showed extensive tuberculosis of the udder, typical acid-fast organisms being demonstrated in smear preparations. Friedlander's bacillus was isolated in culture from purulent foci and from the udder tissue. A biological examination was subsequently carried out on the milk from each cow in the herd but no further evidence was found of udder infection with tuberculosis.

The Spread of Infection in the Herd

Composite milk samples received from four clinical cases early in October were cultured on to surface blood agar and Edward's medium (aesculin crystal violet blood agar). Mucoid colonies appeared on the surface blood agar plates from each of the four samples within 24 hours of incubation. No growth occurred on Edward's medium after 48 hours' incubation.

During the following month infection spread to involve other cows in the milking herd and in November, five grossly abnormal samples from recently affected cows were received for examination. Each sample showed chains of gram-negative bacilli in smear preparations and mucoid colonies were isolated in culture on surface blood agar. Repeat samples were obtained and the same organism isolated in culture. By the middle of January, 13 of the milking cows were clinically affected and positive cultures were obtained from 11 out of 13 composite samples. At the end of January, individual composite samples were taken from the 38 cows in the milking herd and Friedlander's bacilli isolated in culture from 28. The 10 negative cows were resampled 10 days later and an additional positive cow detected, giving a total infection rate of 76 per cent. At a further herd test carried out six weeks later, the organism was isolated from the milk of 29 out of the 37 cows in milk.

Isolation of the Organism and Cultural Characteristics

Smears were prepared from abnormal milk samples and stained by the methods of Gram and Newman. Examination of these showed the presence of cocco-bacilli, either singly or in chains, and apparently encapsulated. Some longer bacillary, and " sausage " forms were also present. Plates of horse blood agar and Edward's medium were seeded with 0·1 ml. amounts of milk and examined after 24 hours' incubation at 37° C., when the blood agar plates showed a growth of non-haemolytic, amorphous, watery colonies 2 to 3 mm. in diameter, with a tendency to coalesce. No growth occurred on Edward's medium. Smears from individual colonies showed gram-negative cocco-bacilli having a tendency to stain more deeply at the poles. The organisms appeared to be encapsulated. The presence of capsules was confirmed in smears stained by the methods of Hiss and Muir. A more detailed examination of the organism showed it to have the following characteristics:—

Motility.—Non-motile when grown in serum broth at 37° C.

Biochemical.—Acid, but no gas, was formed in dextrin, galactose, glucose, maltose, mannite, sorbite, sucrose and xylose. No change occurred in arabinose, dulcite, glycerine, inosite, inulin, lactose, raffinose, rhamnose, salicin and trehalose. Litmus milk and methylene blue milk were not altered. Indole +., M.R. −., V.P. −., nitrates reduced, NH_3 −, H_2S −, Catalase +., Koser's citrate −., and growth did not occur in fresh ox bile.

Pathogenicity for Mice.—The organism was pathogenic for mice by intraperitoneal or subcutaneous injection. Mice injected by the intraperitoneal route with 0·5 ml. of an overnight serum broth culture died within 24 hours. Mice injected subcutaneously with 0·1 ml. of a 10^{-3} or a 10^{-5} dilution of an overnight serum broth culture died in five to six days. In all cases Friedlander's bacilli were recovered in culture from the heart blood and liver.

Treatment and Its Effects

As treatment of clinical cases with penicillin or streptomycin by intramammary injection, or sulphanilamide *per os*, had no apparent effect on the course of the disease, it was decided to try intramammary injection of aureomycin. Laboratory examination confirmed that the organism was insensitive to penicillin and streptomycin at therapeutic levels.

In a preliminary test, three clinically affected cows were given one intramammary injection of aureomycin (Lederle). A fourth cow was given two injections, the second at an interval of 48 hours. A clinical response was obtained within a few days of treatment, the milk returning to normal. Post-treatment samples were taken after an interval of 14 days, and all were negative on cultural examination. At a herd test after a further interval of three weeks, three of the four cows were again culturally positive, suggesting the possibility of re-infection. At this test, 29 of the 37 cows were positive on culture.

Sixteen of the infected cows were selected for treatment with aureomycin. The remaining infected animals, which were approaching the end of lactation, were dried off. Cows which had been consistently negative on cultural test were retained in the herd but were milked in a separate section of the bail.

Each of the 16 infected cows received one tube of aureomycin ointment (containing approximately 200 mg. of

aureomycin hydrochloride) per quarter by the intramammary route. Post-treatment samples were taken 14 days after treatment, by which time the milk from most of the cows was macroscopically normal. Eight of the 16 samples (50 per cent.) were still positive on culture. No further supplies of aureomycin were available for trial so that it was not possible to give a further course of treatment.

Discussion

Organisms of the Friedlander group appear to lead a parasitic existence, mainly in the respiratory tract, where they may be found in association with a variety of diseased conditions. The bacteria show some host preference, being isolated more frequently from man and pigs than from other animals, such as the bovine. The isolation of this organism from abnormal bovine milk was regarded at first as being of little significance, until further investigation showed that most of the cows in the herd were excreting it in the milk. The isolation of Friedlander's bacilli from the bovine udder has been reported previously from one isolated case of infection in one quarter, in which it was present in association with another bacterium, so that its rôle in the aetiology of the condition was problematical. The outbreak now recorded is of interest not only because of its widespread nature but also because Friedlander's bacilli appeared to be the primary cause of clinical disease. Intercurrent infection with organisms normally associated with mastitis was found in only four of the 29 infected cows. These organisms were not recovered at all tests and appeared to have no effect on the severity of the disease in the quarters from which they were isolated.

The cultural characteristics of the organism conform to those generally accepted as being typical of the Friedlander group. The sub-division of this group is not very satisfactory but the biochemical reactions of the present strain appear to conform more closely to those of rhinoscleroma strains than to other members of the group.

The source of infection was not determined. It is interesting to note, however, that in humans Friedlander's bacilli are common secondary invaders in tuberculosis. In this herd, a high percentage of the cows were reactors to the tuberculin test, at least two having tuberculosis of the udder. It is conceivable that the Friedlander's infection became established primarily in udders infected with tuberculosis and subsequently spread during milking to healthy udders, in which it was able to establish itself and cause pathological changes. Calves with Friedlander's infection of the respiratory tract may also have spread infection to udders when sucking. It is evident from the extensive lung lesions found at *post-mortem* examination that respiratory infection in calves with Friedlander's bacilli may be very severe.

The response obtained to the limited treatment given suggests that if aureomycin had been available in sufficient quantity, it would have eradicated infection from affected udders. The milk from most of the cows returned to normal following a single injection and 50 per cent. of post-treatment samples were bacteriologically sterile.

Summary

An account is given of an outbreak of mastitis due to infection with an organism of the Friedlander group. The disease was of a chronic nature and caused the production of grossly abnormal milk. Of the 38 cows in the milking herd, 29 became infected in one or more quarters. Calves fed on herd milk developed a severe respiratory infection. There was a high incidence of tuberculosis in the herd and the possible relationship between this and the Friedlander infection is discussed. Treatment with aureomycin by intramammary injection was followed by the secretion of normal milk and the elimination of infection in about 50 per cent. of cases.

Acknowledgment.—This investigation was carried out in collaboration with Mr. D. Mortimer, M.R.C.V.S., to whom we are indebted for details of the herd history and for assistance in the treatment of affected cattle and the collection of milk samples.

Reference.—Laigret, J., & Leblois, C. (1950). *Bull. Acad. vét. Fr.* **23**, 469.

REVIEW

[Banham's **The Veterinary Surgeons' Vade Mecum.** By W. A. Greig, B.Sc., M.R.C.V.S. Baillière, Tindall & Cox, 8, Henrietta Street, London, W.C.2. Price 17s. 6d.]

Banham's original book was published as long ago as 1887 and since then there have been eight new editions, several of them reprinted, and three revisions of the work.

The book has thus firmly established itself in the veterinary surgeons' library, and in view of the many important developments which have taken place during the past nine years, this new revised edition is both welcome and opportune.

This is not meant to be an exhaustive treatise but as the preface says, " a minor encyclopoedia of the facts and figures to which a veterinary surgeon in practice may from time to time refer." Nevertheless, it is a fascinating volume to browse through and we think the reader would be unlucky not to find, in some form or other, the information he requires. The 200-odd pages embrace much in a small space: Materia medica—Pharmacology—Bacteriology—Parasitology—Nutrition and foodstuffs—Milk—Animals—Health—Notifiable diseases—Allergic tests—Blood—Urine and faeces—Miscellaneous tables.

There are 17 pages of formulae which perhaps are useful to a veterinary surgeon who does all his own compounding, but how many have time to do this nowadays? Reference to the antibiotics is confined to penicillin; some information on other substances in this class, such as streptomycin, aureomycin and chloromycetin would have been valuable. The Dangerous Drugs Regulations and Poisons legislation are set out in a very useful manner for handy reference and the descriptions of some of the simpler and more commonly used laboratory tests should be of considerable value to the busy practitioner. A mistake which should be rectified in subsequent editions occurs on page 116 where *Trypanosoma gambiense* is given as a parasite of domestic animals and the cause of nagana. It is, of course, a human parasite, causing one of the forms of sleeping sickness. *T. brucei* should have been mentioned and *T. theileri* might have been added. The flagellate of turkeys, *Hexamita*, might also have been mentioned.

The book is attractively produced, is a handy size and, we are quite sure, will find its way on to the surgery bookshelf and into students' " digs " as did its antecedents.

Mr. Greig is to be congratulated on the result of his labours, which must have been considerable, in bringing up to date this useful book of reference.

REPORT

Uganda Protectorate: Annual Report of the Veterinary Department for 1951

It is satisfactory to note that the improvement in staff recorded in 1950 has been maintained both in field and research establishments. Shortage of teaching staff, however, hampered educational work during the year.

The report is in two parts, namely, field work embracing disease control, animal husbandry and experiment farms—written by the Director of Veterinary Services—and research, written by the Chief Veterinary Research Officer, covering experiments in the control of rinderpest, trypanosomiasis and ticks; an animal survey; investigation into mineral deficiencies, nutrition, management and grazing of animals; a laboratory diagnostic service; veterinary education and publications.

Disease control resulted in the prevention of any major epidemics, and the marketing and movements of trade stock continued uninterrupted over the greater part of the Protectorate. An outbreak of rinderpest, however, in Masaka District from April to July prohibited movements of stock from the producing grounds of the western area to the consuming area of Buganda. The outbreak among the very highly susceptible Ankole cattle was successfully eradicated by immunisations with Kenya lapinised virus of 120,500 cattle without loss which could be attributed to the vaccine. This is certainly an outstanding advance in the control of rinderpest in an area of very highly susceptible cattle. Rinderpest unfortunately remains endemic in Karamoja District where Kenya attenuated goat virus is used for immunisations, but no administrative pressure has been brought to bear on these pastoral people to have their animals immunised and, as certain tribes are opposed to inoculations, it may be necessary to introduce compulsion to eradicate rinderpest and so rid the Protectorate of the last endemic focus of the disease. In the meanwhile, the policy is to create a zone of immune cattle bordering on Karamoja with Kenya attenuated goat virus.

Trypanosomiasis control involved the treatment of 172,700 cattle with antrycide methyl sulphate and 11,900 with dimidium bromide, by "block" treatments of cattle populations or on a "piecemeal" basis of infected or in-contact herds, and met with outstandingly successful results in tsetse-free areas where trypanosomiasis is endemic due chiefly to dissemination by *stomoxys*. The control of trypanosomiasis in Uganda with different species of tsetse and trypanosomes, as in so many other parts of tropical Africa, remains a vast problem to be solved.

East Coast fever is endemic throughout the greater part of the Protectorate with heavy calf mortality, but with better calf management these losses could be reduced considerably.

Tick control experiments in sprays, comparing the efficiency of benzene hexachloride (Gammatox) with chlorinated camphene preparations (Toxaphene and Coopertox) for tick killing power and residual effect of the spray, were carried out and indicated that the latter had quicker killing power on *R. appendiculatus* at strengths of 1:250 but did not give adequate protection against tick build up for more than one week. When chlorinated camphene was increased to 1:150, adequate protection for 10 days resulted. The demand in certain more progressive areas for a simple type of spray pump exceeded the supply.

Contagious bovine pleuro-pneumonia continues endemic throughout the greater part of Karamoja and remains to be tackled when rinderpest has been eradicated.

An increase of 300,000 in five years in the cattle population of a country where there is an unsatisfied demand for meat with consequent high prices offered for cattle can be regarded as encouraging. Progress has been made in the development of livestock improvement areas in many districts on the principle of "self help" by demonstrating improved methods of animal husbandry, control of ticks by spraying, increasing the number of watering points by the construction of dams, etc., and grazing control to prevent soil erosion from overstocking. As in so many parts of Africa the breaking down of the traditional outlook that livestock represents wealth, no matter the quality, is a problem which still remains widespread among pastoral tribes.

On the whole, hides and skins production was satisfactory in spite of fluctuating prices, and, due to the propaganda of field veterinary officers, suspension drying has increased substantially, but blemishes due to faulty flaying have still to be tackled.

The Livestock Experimental Station at Entebbe, projected as a self-supporting stock farm for the improvement of indigenous stock, is nearing completion and should serve as a useful basis for wide range research and also as a helpful means of demonstrating improved methods of animal husbandry and pasture management. A notable feature has been the large number of African visitors from all parts of the Protectorate who were shown round.

The report stresses the need for more extensive investigation of factors concerned in the maintenance of health of livestock by nutrition, management and grazing. It is also clear that an expansion in the livestock industry is essential to meet the ever-increasing local demands for meat and dairy products. This, however, is common to many African territories which, like so many other parts of the world, are becoming less capable of meeting increasing requirements from other continents unless progress can keep pace.

This report is most interesting and informative and Mr. Cronly and his staff are to be congratulated on a most successful year's work.

H. H.-B.

NEW VETERINARY RESEARCH STATION FOR EIRE

The *Irish Press* reports that Abbotstown House and lands, comprising 435 statute acres, at Castleknock, Co. Dublin, are to be adapted to house the Veterinary Research Laboratory of the Department of Agriculture now located at Thorndale, Drumcondra, Dublin.

The estate was purchased over two years ago for an undisclosed figure, and pending its adaptation as a veterinary research laboratory is being used for mixed farming, including the propagation of pedigree seeds and the temporary accommodation of animals acquired by the Department for distribution throughout the country.

It was formerly the residence of Lord Holmpatrick, and had been in the possession of the Holmpatrick family for over a century.

* * * * *

In an address to the Ormskirk Rotary Club, Mr. Richard Rothwell stated that mortality amongst young pigs had been much reduced, by spraying them, just weaned from the sows, with oil of aniseed to stop them fighting. As they all smelled alike that stopped fighting.—*Meat Trades Journal.*

* * * * *

At a meeting of the Council of the National Farmers' Union held on Thursday of last week, Sir James Turner was unanimously appointed President for the ninth year in succession.

NOTES AND NEWS

Diary of Events

Feb. 7th.—North of Scotland Division, B.V.A.: Winter Meeting and Annual Dinner at Aberdeen (Marcliffe Hotel, Queen's Terrace), 3 p.m.

Feb. 11th.—Meeting of the Editorial Executive, B.V.A., 2.30 p.m.

Feb. 12th.—Annual Ball of Glasgow University Veterinary Medical Association, to be held at the Rhul, Sauchiehall Street, Glasgow, from 8 p.m. to 2 a.m.

Feb. 12th.—Royal (Dick) School of Veterinary Studies Annual Ball, at the Assembly Rooms, George Street, Edinburgh.

Feb. 13th.—Joint meeting of the Lancashire Division, B.V.A., and the North West Branch of the Society of Medical Officers of Health, at Manchester Town Hall Extension, 3 p.m.

Feb. 18th.—Annual General Meeting of the Midland Counties Division, B.V.A., at Birmingham (The Medical Institute), 2.30 p.m.

Feb. 18th.—Annual General Meeting of the Scottish Metropolitan Division, B.V.A., in the Royal (Dick) School of Veterinary Studies, 2.30 p.m.

Feb. 18th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at 1, Wimpole Street, W.1, 5 p.m.

Feb. 19th.—Meeting of the Herts & Beds Division, B.V.A., at 70, Holywell Hill, St. Albans, 2.30 p.m.

Feb. 25th.—Meeting of the South-East Midlands Division, B.V.A., at Northampton (Franklin's Gardens Hotel), 7.30 p.m.

Feb. 26th.—Annual General Meeting of the South-Eastern Division, B.V.A., at Maidstone (The Royal Star Hotel), 2.30 p.m.

Feb. 27th.—91st Annual General Meeting of the Lancashire Division, B.V.A., in the Veterinary Hospital, Pembroke Gardens, Liverpool, 2.30 p.m.

Feb. 27th.—Annual Ball of the Veterinary Society, Faculty of Veterinary Science, The University, Liverpool, to be held in the Students' Union from 8.0 p.m. to 2.0 a.m.

March 4th.—Meeting of the Association of Veterinary Teachers and Research Workers (Scottish Regional Group) in the Royal (Dick) School of Veterinary Studies, Edinburgh, 2.30 p.m.

March 19th.—Annual Dinner and Dance of the East Midlands Division, B.V.A., at Nottingham (The George Hotel). Reception 7 p.m.

April 25th.—30th Annual General Meeting of the Association of State Veterinary Officers, in the Auditorium of the Wellcome Foundation, 183-193, Euston Road, N.W.1, 2 p.m.

Council and Committee Meetings of the B.V.A.

The following arrangements for the Council and Committee meetings of the B.V.A. in April and July, 1953, have been made by Council B.V.A.:—

April 20th, 21st and 22nd, in Edinburgh: *Members are requested to note change of dates from those announced earlier, viz., April 29th, 30th and May 1st.*

July 29th, 30th and 31st in London.

R.C.V.S. Council and Committee Meetings

The next series of meetings will be held in London on February 4th, 5th and 6th (Council).

THE SEA-FLOOD DISASTER

As we write, profound sympathy with the relatives of human victims of the sea inundation of vast areas of our eastern shores is uppermost in all our minds. Disaster, however, has not stopped at the loss of human life and the wreckage of homes. Agriculture has sustained enormous damage both to livestock and to land. Some of the larger animals gained the safety of ground above flood level, but hundreds of horses and cattle, and thousands of sheep and pigs were drowned, while the destruction of poultry has been great. Moreover, many people in such populous areas as Tilbury, Canvey and Sheerness have lost well-loved pets.

The heroism shown by rescue workers was by no means restricted to the succour of the human population. We know that foremost in rescue operations of every kind in the afflicted areas, were members of our profession and our gratitude goes out to them. On all of us rests the obligation to give unstinted support to national and local relieving agencies.

* * * * *

PERSONAL

Appointments to University Chairs

Appointments to chairs in University College, Dublin (National University of Ireland), include those of Mr. P. E. Mullaney, M.R.C.V.S. (veterinary pathology and bacteriology), and Mr. W. R. Kelly, M.R.C.V.S. (veterinary medicine and meat inspection).

* * * * *

Birth—Harris.—On January 26th, 1953, at Fordingbridge Cottage Hospital, to Rosemary (*née* Street), wife of Kenneth A. Harris, M.R.C.V.S., Avonside, Stratford-sub-Castle, Salisbury, a daughter.

* * * * *

Ministry's Veterinary Field Staff: Changes in Personnel.—The following changes are announced:—

Captain John Fox, M.C., M.R.C.V.S., Superintending Veterinary Officer, retired on January 30th, 1953.

Mr. John Cameron, B.SC., M.R.C.V.S., D.V.S.M., changed his station on January 31st, 1953, from H.O. Tolworth to the West of England as Superintending Veterinary Officer in charge of Gloucestershire, Somerset and Wiltshire.

Mr. W. D. Macrae, M.R.C.V.S., D.V.S.M., Superintending Veterinary Officer, changed his station on January 31st, 1953, from Nottingham to H.O. Tolworth.

Mr. A. M. K. McLeod, M.R.C.V.S., D.V.S.M., changed his station on January 31st, 1953, from Edinburgh to Nottingham as Superintending Veterinary Officer (on promotion) in charge of Derbyshire, Lincolnshire and Nottinghamshire.

Mr. R. C. Matheson, M.R.C.V.S., changed his station on January 31st, 1953, from H.O. Tolworth to the Ministry's Scottish Office, Edinburgh, as Divisional Veterinary Officer (on promotion).

Mr. C. Sweeney, M.R.C.V.S., Veterinary Officer, changed his station on January 26th, 1953, from Aberystwyth to Taunton.

* * * * *

THE HARRY STEELE-BODGER MEMORIAL FUND

Supporting Tribute From "The British Veterinary Journal"

We shall be publishing shortly the fifth list of donations to the above Fund and would remind our readers that cheques, postal orders, etc., should be made payable to "Steele-Bodger Memorial Fund" and sent to: S. L. Hignett, Steele-Bodger Memorial Fund, B.V.A., 36, Gordon Square, London, W.C.1.

We have pleasure in reproducing the following impressive contribution in which, in its current issue, *The British Veterinary Journal* commends the Fund to the support of its readers:—

History records that, throughout the ages, certain men have influenced the progress of events to a far greater extent than did any of their contemporaries. There have been occasions when the destiny of nations has been changed completely by such men. The change has not been to the common good always, but there is ample evidence that times of great trouble and anxiety stimulate the appearance of a leader who can infect his fellows with his own exuberance and compel them to great effort.

This phenomenon is not confined to the affairs of nations; it can and does occur in professional circles. We of the veterinary profession have good reason to be thankful, for we have not

lacked great leaders in the past, and it is right that we should hold their memory in proud and grateful remembrance. Harry Steele-Bodger was a great leader of men who came to his zenith in 1939, when our country was entering a time of great peril, when his profession was filled with apathy coincident with unemployment and financial stress. He came to power a supreme optimist as regards the future destiny of the profession, and he refused to accept the black side of things. His enthusiasm was contagious and in a short time he wrought a complete revolution in our outlook.

He stimulated those in authority, he spurred the somnolent to action, he compelled stock-owners to recognise and appreciate the value of an efficient veterinary service. The farm gates were opened again, and there can be no doubt that the great increase in milk production which did so much to preserve the health of the nation in its time of peril was in no small measure the result of his efforts.

His campaign led to a great upsurge in veterinary work on the farms, unemployment in the profession was swept away, and the present satisfactory position in this regard is a tribute to his foresight and vision.

The profession, and especially the younger veterinary surgeons, owe a great debt to Harry Steele-Bodger, a debt which they can never repay, but they can show gratitude and respect for his life and work by supporting the scholarship fund which has been launched to revere and perpetuate his memory.

The fund will enable a scholar to do something which was near " S.-B.'s " heart, for he was always a scholar and a great mixer amongst men. He would have said: "Go and meet friends, learn and teach, and bring back anything which is good for the profession and our patients."

We commend the H. S.-B. Memorial Fund to our readers, with the hope that they will support it to the utmost of their ability, so that our memory of a great veterinary surgeon may never grow dim.

* * * * *

DAMAGE DONE BY ANIMALS

Change in the Law of Civil Liability Recommended

In our issue of last week we intimated, in a preliminary reference, that in its Report on the Law of Civil Liability for Damage done by Animals (Cmd. 8746: H.M.S.O. 6d.) the Committee, of which Lord Goddard, the Lord Chief Justice, was Chairman, recommended that the law concerning the responsibility for damage done by animals " should be based upon negligence."

The Report states that the Committee found the subject matter of their enquiry to be of considerable difficulty and complexity, largely due to the fact that the law was to be found in many cases, some of great antiquity, and to the tendency that had existed towards treating cases which were, in the opinion of the Committee, decided as matters of fact as if they laid down principles of law. " The law of England has hitherto regarded animals as falling into one of two classes, distinguishing those *ferae naturae* from those *mansuetae naturae*. With regard to the former, absolute liability was imposed on their keeper for any injury they might cause. With regard to the latter, apart from negligence, the owner or keeper was liable only if it could be proved that he knew that the particular animal which caused the damage had a vicious propensity; this is commonly referred to as the *scienter* rule. The development of this distinction has made the law intricate and complicated. The Committee propose that the distinction should be abolished; and that (subject to the law of cattle trespass next considered) liability for the acts of every class of animal should be based upon negligence. This need not result in any practical diminution of an owner's responsibility for a dangerous animal because the degree of care which must be exercised in the keeping of an animal will depend upon its nature and will obviously be far higher in the case of a tiger than of a dog.

" Similar considerations would logically lead to the abolition of the doctrine of absolute liability for cattle trespass. This is one of the oldest forms of action known to the common law. It is based on the duty of the owner to keep his cattle on his own land and to prevent them from straying. The result of the modern cases on this subject is that a person can recover for damage done to his land and crops by trespassing cattle irrespective of negligence on the part of their owner, but in the absence of *scienter* cannot recover for damage to the person whether caused to himself or his servants. . . . At one stage of our deliberations a majority of the Committee were of opinion that the action should be abolished and that liability for damage done by trespassing cattle should be dealt with under the general law of negligence. On further consideration, however, and in view of the strongly expressed opinion of the National Farmers' Union, we have come to the conclusion that the action should remain substantially as at present. This class of liability is of interest only to farmers and landowners and the general public are not affected thereby. The evidence satisfied us that the general incidence of liability is well understood by the former class who are in favour of the law as it stands." The Committee therefore recommend that the action of cattle trespass should be retained but that the damage recoverable should be limited to the damage done to the land and to crops.

In accordance with their belief that liability should depend on negligence, the Committee recommend " that an occupier should be under a duty to take reasonable care that cattle or poultry lawfully on land in his occupation do not escape therefrom on to the highway, and that the occupier should be responsible for all damage caused to persons or chattels by cattle or poultry which escape owing to a breach of that duty whether or not acting in accordance with their ordinary nature; provided that this should not apply to escape or straying on to such parts of a highway as pass over any common, waste or unenclosed ground. This doctrine should also apply to the escape of animals on to land other than the highway which cause damage to persons or chattels."

" Reasonable Care "

On the general duty to prevent animals causing damage, " as we have already said, we recommend that the distinction between animals *ferae naturae* and *mansuetae naturae* should be abrogated and also the doctrine of *scienter*. Liability should depend on whether the owner or keeper of the animal has exercised reasonable care to prevent the animal causing damage, and the standard of care required will be greater or less according to the nature and habits of the animal concerned. In determining whether reasonable care has been exercised, regard should be had to the nature and disposition of the animal, including its behaviour at the time when the damage was done, and to the knowledge which the owner or keeper had or ought to have had thereof. At present one consequence of the doctrine of *scienter* has been to place an unfair handicap on the injured person. He has to prove that a vicious propensity in the animal was known to the owner or keeper. In our opinion the onus should be shifted and it should be for the defendant to show that he acted without negligence and not for the plaintiff to adduce affirmative proof that negligence existed. We recommend that liability should rest upon both the owner and the keeper of the animal. In many cases the owner will also be the keeper but, if he is not, he should be liable unless he can prove that he exercised due care in entrusting the animal to the person who was the keeper at the time when the damage happened. A person should be deemed to keep an animal if it is in his charge or that of any infant member of his household. We may add that the giving of an oral or written warning, such as ' Beware of the dog ' or ' Beware of the bull ' ought not to be considered of itself a proper discharge of the duty of care. It will be understood that the recommendations in this paragraph apply to dogs as well as to other animals, but must be taken to be without prejudice to the absolute liability imposed by the Dogs Acts, 1906 to 1928, on the owner of a dog causing damage to cattle or poultry. We recommend that section 1, sub-section 1, of the Act of 1906 should be amended by the insertion of the words ' or keeper ' after the first two words of the sub-section and that for sub-section 2 there should be substituted a new sub-section providing that ' a person shall be deemed to keep a dog if it is in his custody or possession or that of any infant member of his household '. We have been much impressed by the facts brought to our attention as to the number of accidents caused on the highway by dogs not kept under proper control and if our recommendations are adopted we think they will give a much needed remedy which may not at present exist. There is a considerable body of opinion in favour of compulsory third party insurance in respect of dogs, but whether this should be imposed appears to us to be outside our terms of reference.

" We emphasise that we do not intend that these recommendations should impose any additional liability on an owner towards a trespasser on his land."

Protection Against Trespassing Dogs

" We have paid great attention to the representations made to us as to the extensive damage suffered by farmers by reason of dogs chasing cattle and poultry and, more especially, sheep. In theory, the Dogs Acts provide an adequate remedy; the practical difficulty is to identify the dog. We cannot envisage any statutory provision which would obviate or lessen this difficulty, though possibly a more rigorous enforcement of the law as to the provi-

sion and marking of collars might afford some degree of protection. We think, however, that the power to deal with a trespassing dog should be increased. The present law is as laid down in *Cresswell* v. *Sirl* (1948). An owner of animals is justified in shooting a dog if he can establish—

(1) that the dog was actually attacking the animals, or likely to renew an attack so that the animals were in real and imminent danger; and

(2) that there was no practicable means other than shooting of stopping the attack or preventing a renewal of it, or that the owner was acting reasonably in regarding the shooting as necessary for the protection of his animals.

These limitations of the right to shoot are restrictions on the protection of property which, we think, having regard to the real and serious menace that has to be met, should be removed. We recommend that when a farmer or other occupier sees a dog trespassing and shoots it, it should be a defence to an action brought in respect of the shooting to prove (*a*) that the dog when shot was committing a trespass on land in the occupation of the defendant or his employer, and (*b*) that he reasonably believed that cattle or poultry on that land had been or would be injured by reason of such trespass, and (*c*) that within 48 hours after the dog was shot he gave notice of the shooting to the police officer in charge of the police station nearest to the place where it occurred."

The other members of the Committee were Lord Tucker, Mr. Justice Devlin, Mr. Justice Davies, Professor A. L. Goodhart, Q.C., Mr. John G. Archibald, Mr. N. Croom-Johnson, Professor Glanville Williams and Mr. Rodger Winn.

Professor Goodhart, in a minority report, thought that the owner of an animal *ferae naturae*—*e.g.*, a tiger—should be held liable in all circumstances if the animal escaped and did damage, even though there was no negligence on the owner's part.

In another minority report Professor Glanville Williams says he would abolish the action of cattle trespass.

* * * * *

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax:

Argylls.—Toward Point Farm, Toward, Dunoon (Jan. 28th).
Bucks.—Caldecote Farm, Newport Pagnell, Bletchley (Jan. 29th).
Cambs.—Riverside, Clayhithe, Horningsea (Jan. 26th); Red House Farm, St. Neots Road, Hardwicke (Jan. 27th); Wombwell Valley Farm, Fulbourn, Cambridge (Jan. 28th).
Cardiganshire.—Parc-y-Pratt Farm, Cardigan (Jan. 30th).
Ches.—Hill Top Farm, Wincle, Macclesfield (Jan. 27th).
Derbys.—Post Office Farm, Lockington, Derby (Jan. 30th).
Devon.—Hunts' Meadow, Exeter Road, South Molton (Jan. 30th).
Glos.—The Warth, Arlingham, Gloucester (Jan. 28th); Great House, Chipping Sodbury, Bristol (Jan. 30th).
Kent.—North Eastbrey Farm, Faversham (Jan. 23rd).
Lancs.—Boulton Croft Farm, Esprick, Kirkham, Preston (Jan. 23rd); Fordstone Farm, Preesall, Fleetwood; Plane Tree Farm; Inskip-with-Sowerby, Preston (Jan. 26th); Maiden House Farm, Pleasington, Blackburn (Jan. 30th); Beechgrove Farm, Woodplumpton, Preston (Jan. 31st).
Norfolk.—Willow Farm, Badley Moor, Dereham; Beeches Farm, Dickleburgh, Diss (Jan. 26th)
Perths.—Broich Farm, Doune, Perth (Jan. 27th).
Salop.—Lodge Farm, Bishops Castle (Jan. 28th).
Somerset.—Stowell House, Stowell, Henstridge, Templecombe (Jan. 30th); Edwicke Farm, North Wootton, Shepton Mallet (Jan. 31st).
Surrey.—Dell View, Woodham Park Road, New Haw, Weybridge (Jan. 27th); Brackendene Farm, Weybridge (Jan. 29th).
Warwicks.—Hillside Farm, Four Oaks, Sutton Coldfield, Birmingham (Jan. 27th).
Westmorland.—Kirkbarrow, Tirril, Penrith (Jan. 23rd).
Wilts.—Iron Pear Tree Farm, Rowde, Devizes (Jan. 27th).
Yorks.—Hodgson Moor Farm, Waddington, Clitheroe (Jan. 26th); Lina Laithe Farm, Earby, Colne (Jan. 27th); Park Gate Farm, Skelmanthorpe, Huddersfield (Jan. 28th).

Foot-and-Mouth Disease:

Mon.—Penylan Farm, Barrock Hill, Newport (Feb. 1st).
Somerset.—Brent Farm, Huntspill, Highbridge (Feb. 2nd).

Fowl Pest:

Berks.—Fern Lea, Finchampstead Road, Wokingham (Jan. 30th).
Bucks.—Cophill Poultry Farm, Long Crendon, Aylesbury (Jan. 28th).
Cambs.—46, Bridge Street, Chatteris (Jan. 30th); 10, Silver Street, March (Jan. 31st).
Essex.—Linley House, Point Clear, St. Osyth (Jan. 24th).
Herts.—Upper Cromer Hyde Farm, Lemsford, Welwyn Garden City (Jan. 28th).
Lancs.—Eaves Lane, Eaves, Preston (Jan. 24th); 117, Todd, Lostock Hall, Preston (Jan. 26th); 222, St. Anne's Road, Blackpool; Tag Lane, Ingol, Preston (Jan. 28th); Slab Hall Farm, Oak Tree Avenue, Ingol, Preston (Jan. 29th); 6, Bateman Grove, Morecambe (Feb. 1st).
Lincs.—Ornby-by-Spital, Lincoln; Woodville, Lincoln Road, Ruskington, Sleaford (Jan. 24th); The Green, Welbourn, Lincoln (Jan. 30th).
London.—9, Chestnut Road, Walthamstow, London, E.17 (Jan. 29th).
Norfolk.—16, Council Houses, Pentney, King's Lynn (Jan. 23rd).
Salop.—Myrtle Cottage Farm, Crudgington, Wellington (Jan. 24th).
Surrey.—10, Fairfield South, Kingston-on-Thames (Jan. 28th).
Sussex.—Manor Farm, West Harting, Petersfield (Jan. 23rd); Windmill Farm, Race Hill, Brighton (Jan. 27th).
Warwicks.—Barnacle House Farm, Shilton (Jan. 30th).
Yorks.—9, Harding Houses, Cross Hill, Keighley (Jan. 30th); Top Farm, Horton-in-Ribblesdale, Settle (Jan. 31st).

Swine Fever:

Ches.—Brassey Green Hall, Tiverton, Tarporley (Jan. 23rd); The Fields, Nether Peover, Knutsford (Jan. 30th).
Cornwall.—36, St. Day Road, Redruth (Jan. 27th); Glendorgal, Newquay (Jan. 28th); Copperhill Farm, Redruth; Trerauke, Roche, St. Austell; Stamps Trerice, St. Dennis, St. Austell; Basaham, Constantine, Falmouth (Jan. 29th); Roselidden Farm, Wendron, Helston; Shuffley, Tolgus, Redruth (Jan. 31st).
Essex.—Turner Meadows, Turner Road, Colchester (Jan. 26th); Little Fowler's, Galleys Corner, Cressing, Braintree (Jan. 31st).
Flints.—Well House, Killins Lane, Shotton (Jan. 29th).
Glam.—Waunwen Holdings, Llangeinor, Bridgend (Jan. 30th).
Lincs.—Glebe Farm, Blyton, Gainsborough (Jan. 27th).
Oxon.—Smallholdings, Littleworth Road, Wheatley, Oxford (Jan. 27th).
Middlesex.—Braemar Farm, Ruislip (Jan. 31st).
Norfolk.—Pied Bridge Farm, Redenhall, Harleston (Jan. 28th).
Staffs.—Lint House Lane, Wednesfield, Wolverhampton (Jan. 23rd); Far Leys Farm, Cadley Hill, Castle Gresley, Burton-on-Trent (Jan. 26th).
Suffolk.—10, Broom Road, Lakenheath, Brandon; 43, Main Road, Kesgrave, Ipswich; Glamis, The Street, Capel St. Mary, Ipswich (Jan. 23rd); Sayers Farm, Semer, Ipswich; East Low Hill Farm, Kougham, Bury St. Edmunds (Jan. 26th); Slaughter Field, Trimley (Jan. 28th); Boyton Hall Farm, Boyton, Woodbridge; Headlands, Foxall, Ipswich (Jan. 30th); Hill Farm, Sproughton, Ipswich; The Warren, Head Lane, Great Cornard, Sudbury (Jan. 31st).
Surrey.—France Farm, Lyne, Chertsey (Jan. 28th).
Warwicks.—Shenley Hill Farm, Northfield, Birmingham (Jan. 24th); Shenley Court, Northfield, Birmingham (Jan. 28th); Fosse House Farm, Ettington, Stratford-on-Avon (Jan. 30th).
Worcs.—Crowcroft, Poultry Farm, 187a, Northwick Road, Worcester (Jan. 24th); Four Elms, Lutley Lane, Lutley, Halesowen; Ivydene, Chadwick Bank, Hartlebury, Kidderminster (Jan. 29th); Pound Green, Arley, Bewdley (Jan. 31st).
Yorks.—Park Avenue Allotments, Carcroft, Doncaster; 16, Sheffield Road, South Anston, Sheffield (Jan. 23rd); Hull and Barnsley Garden, Stoneferry, Hull (Jan. 26th); Old Hall Farm, Nevison Leap, Pontefract (Jan. 29th).

* * * * *

FOOT-AND-MOUTH DISEASE AND FOWL PEST

Since our last issue outbreaks of foot-and-mouth disease have been confirmed among stock at Newport, Mon., among cattle, sheep and pigs at Huntspill, near Bridgwater, Somerset, and among pigs at Llantwitfardre, Glamorgan.

Outbreaks of fowl pest have occurred in Berkshire, Cambridgeshire, Lancashire, Lincolnshire and Yorkshire; the total number of outbreaks since November 25th now exceeds 400.

* * * * *

ISLE OF MAN ATTESTED HERDS SCHEME

The following figures show the number of animals in the Isle of Man Board of Agriculture and Fisheries Attested Herds Scheme on December 31st, 1952.

Total Cattle Population	No. of Attested Herds	No. of Cattle in Attested Herds	Percentage Attested
23,157	476	11,487	49·6

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

CLIPPING

Sir,—I was hoping that the recent discussion on "Clipping" would have required no comment from me; but in so far as the Veterinary Advisers to the Smithfield Show have been mentioned, I feel that as Chief Veterinary Inspector and Adviser to the Smithfield Club, some reply from me becomes justified.

I, like many others, have had considerable experience with horses during the 1914-1918 war; but I can also claim considerable experience with show cattle since. While I fully appreciate and value the sincerity of Mr. G. C. Lancaster's suggestion, I have yet to be convinced that there is any comparison to be made, or useful purpose to be gained by such procedure.

The number of cases of respiratory trouble that I have encountered amongst cattle at shows has been comparatively small, and this is remarkable when one considers the changes of environment to which these animals are subjected at various times.

Unfortunately a fog of unprecedented severity descended at a time when the Smithfield Show was being held, and it was the "fog" that was responsible for the respiratory distress and ultimate death of some of the exhibits. It is of interest to note that the sheep and pig exhibits escaped the effects of the fog, and this I attribute to their being on the first floor where the atmosphere was much less contaminated than that experienced on the ground level where the cattle were exhibited, and also to the fact that the sheep and pigs lay with their heads often in the straw which could thus act as a filter.

It seems apparent to me that until some method is discovered whereby fog can be dispersed or its effects rendered harmless, respiratory troubles in show cattle will always persist.—Yours faithfully, Basil O. E. Walpole, "The Orchard," 222, Chase Side, Old Southgate, N.14. *January 30th*, 1953.

* * * * *

BLINDNESS IN OLD HORSES

Sir,—I wonder if any of your correspondents could enlighten a layman on the following point? A friend of mine recently visited America and during her trip saw Battleship, the 1938 National winner. Although otherwise in the best of health and spirits the old horse is quite blind. My friend was informed that in America old horses often go blind.

Why should this be so? Is it due to some external factor to which an English-bred imported horse would be equally susceptible, or is it an inherent unsoundness peculiar to American horses, manifesting itself in senility, as deafness still does in old bull-terriers?

I cannot at the moment verify it, but I think Man o' War, Battleship's sire, was blind in old age. This, of course, was an entirely different horse from the Irish Man of War, sire of the great Manifesto.—Yours faithfully, G. E. Jones, Craig-Yr-Eos Bungalow, Southerndown, Glam. *January 21st*, 1953.

* * * * *

"BABY PIG MORTALITY"

Sir,—In your issue of January 10th you publish an abstract on baby pig mortality.

We should be interested to know your object in publishing an account of an experiment, in which it was proved that piglets starved from birth in a relatively warm environment survived three times as long as piglets starved from birth in a relatively cold environment.

The main conclusion drawn from this experiment appeared to be that the earlier demise of the "cold" piglets was due to a more rapid depletion of their carbohydrate reserves.. It appears to us that such obvious facts are not worth investigating in such a manner. Surely seemingly futile experiments of this nature should be ignored, instead of being countenanced by the journal of the B.V.A.—Yours faithfully, F. E. T. Gibson, D. W. Brocklesby, C. Loving, J. F. Waller, R. H. Mears, Royal Veterinary College, Royal College Street, London, N.W.1. *January 21st*, 1953.

* * * * *

A REVIEW

Sir,—Fairness forbids me to let the criticism of "Herdsmanship" by Newman Turner pass unchallenged.

When one reads many of the articles in *The Veterinary Record*, particularly with regard to vaccine and serum therapy, one is often left wondering "just where has that got us?" but here is a book which unorthodox in method and critical of the veterinary profession as it undoubtedly is, yet shows what results can be achieved by a natural and ecological approach to the problem of disease.

I think, too, we must not overlook the fact that we have here a book, not written by a financed and hence *interested* professional man but by a *disinterested* layman!

Perhaps your critic is envious that such "unscientific" practice brings results which are denied to the veterinary profession as a whole.

Let not the profession take up the attitude that "this does not correspond to our views, therefore it cannot be right," but rather may it be a respecter of truth. Many historical figures held unorthodox views and were persecuted for them but many of these views have since been shown to be essentially correct. Surely there is a moral here somewhere!

As a final counter-criticism may I say that the final paragraph of the "crit." lefinitely savours of "sour grapes" and is unworthy of such a publication as *The Veterinary Record*.—Yours faithfully, D. K. Lethbridge, Usher Institute of Public Health, Edinburgh. *January 20th*, 1953.

Our reviewer of this book writes:—

"In his counter-criticisms the writer suggests that articles in *The Veterinary Record*, particularly 'with regard to vaccine and serum therapy' leave one wondering 'just where has that got us,' and uses this as a basis of argument to justify unorthodox treatment and criticism of the veterinary profession, making claim that the miraculous results achieved arise by a 'natural and ecological approach to the problem of disease.' Such assertions would be convincing if

(1) articles were quoted;

(2) your readers were informed how your counter-critic assesses the trend of opinion which is left wondering, and

(3) your readers were told where proof exists that the results claimed are achieved by a natural and ecological approach to the problem of disease.

"It is not possible to accept the suggestion made in paragraph (2) that a veterinary surgeon is unable to give a fair and honest opinion at least in respect of this review because of financial interest. I will not discuss the financial aspect as it affects the author, having no knowledge of the fruits of authorship or unorthodox practice.

"In regard to the claim that envy of such 'unscientific practice bringing results denied to the veterinary profession as a whole' may be felt: this is a statement which the book does not prove. It is because the profession is a 'respecter of truth' that it cannot accept claims of unorthodox treatment without proof. Unorthodoxy is not the lone privilege of the author and does not justify acceptance by anyone *per se* that the particular beliefs and claims are correct.

"Your reviewer is not attempting to persecute, he is attempting to assess the value of this book to the livestock population for which the veterinary profession holds a direct responsibility.

"The moral surely is that claims of miraculous results of unorthodox treatment made with such confidence cannot await proof from posterity."

* * * * *

A BRIGHTER NEW YEAR

Sir,—May I, through your columns, express my deep appreciation to two Edinburgh students who sent me (anonymously) the beautiful illustration which now occupies such a prominent position in my waiting room?—Yours faithfully, H. C. Watson, 10, Caledon Street, George, Cape Province. *January 22nd*, 1953.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th January, 1953	68	2	86	—	41
Corresponding period in—					
1952	25	11	21	—	42
1951	17	—	131	2	35
1950	13	—	10	5	—

Tuberculosis Order of 1938

The number of bovine animals slaughtered under the Tuberculosis Order of 1938 during the period October 1st to December 31st, 1952, was 585.